





Frogs

IN THE GARDEN

by **Grant Wardell-Johnson**

With many of the world's frog populations thought to be in decline, people are asking where all the frogs have gone. More positively, many are now encouraging these delightful critters to be a part of their lives. Perhaps the best way to do this is as Voltaire's *Candide* (1759) did so long ago - 'to tend one's own garden'.

Frogs belong to a class of vertebrates called Amphibia, a name derived from their dual life-cycle, which is usually aquatic during egg and larval stages and terrestrial during adulthood. Despite this dependence on a moist environment, frogs have successfully adapted to a great variety of ecological situations. They occur in deserts and high mountains, in all continents except Antarctica, and on many islands. Australia is blessed with a remarkable number and variety of frogs. More than a third of Australia's total frog fauna occurs in Western Australia, and more than half of these are found only in WA. The 29 species of tree frogs and ground frogs found in the south-west (roughly the area between Esperance and Shark Bay) have a remarkable variety of shapes, sizes, life histories and mating calls.

The call of a frog is perhaps its most distinctive and most easily recognisable feature. Each kind of frog has a different call. In the breeding season, which varies from species to species, male frogs emit a loud advertisement call that, among other things, serves to attract a mate. Female frogs that are ready to mate respond to the calling male and move towards the source of the noise. The biggest and loudest males call from the most suitable places for egg-laying, which differ for each species. When the female locates the male, mating occurs and the eggs are laid.

The advertising call of the male also helps maintain spacing between calling frogs. Breeding males are hostile towards other males of the same species, and the calling acts as a warning to potential intruders to the male's calling site.

A night-time frogging expedition to a dam or creek at any time of the year will be rewarded with the sounds of calling

frogs. A torch will help you to locate calling frogs. If you live in the country or near wetlands, you can also try listening outside your door.

FROGS IN YOUR GARDEN

Not all of the different species of frog in the south-west occur together and not all are likely to frequent gardens. However, many of the more common and interesting species can and do occur there.

The slender tree frog (*Litoria adelaidensis*) and the bull frog (*Litoria moorei*) are often found in gardens, particularly in greenhouses and ferneries or areas with water such as ponds. As its name suggests, the slender tree frog is a long, slender frog. Ranging in colour

from brown to green, it is often seen on window panes on warm, wet nights. In winter, from reeds up to a metre above water, it calls with a harsh grating screech, incorporating grunts. The bull frog, on the other hand, is a very large green and gold frog with little climbing ability. In spring it calls from water with a sound like a motor bike changing gears. This species is one of the most commonly encountered and has a voracious appetite.

Other frogs likely to be seen and easily distinguished include several of the ground frogs. The banjo frog (*Lymnodynastes dorsalis*) is a noble frog indeed. *Lymnodynastes* is Latin for 'Lord of the Marshes'. This species has a stripe down its back, hence *dorsalis* for dorsal stripe. It occurs throughout the south-



Right: The slender tree frog (*Litoria adelaidensis*) calls with a harsh grating screech and is often found in ferneries or greenhouses.

Photo - Jiri Lochman (Top)

Photo - Grant Wardell-Johnson (Below)

Previous page: Frogs are a fascinating and diverse group of creatures that can benefit from good garden planning. The moaning frog (*Heleioporus eyrei*), for example, will thrive in low areas prone to flooding.

Photo - Jiri Lochman

west, is very robust and has a bright crimson groin. It calls from vegetation in swamps and dams in winter and spring. Its loud, deep and explosive 'bonk' is unmistakable. It is often found on roads during wet, summer nights or may be dug up when turning garden soil.

There are five species of moaners (*Heleioporus*) in the south-west. The males call from burrows which become flooded after egg-laying in winter. All are large, stout, burrowing frogs with distinctive calls. The moaning frog (*H. eyrei*) is common around Perth and is widespread in the lower south-west. It tends to make itself unpopular when it calls (a loud, low moan) beneath the houses of people trying to sleep. Its calls are, however, welcome to gardeners in the autumn dry, for they herald the winter rains after the long summer.

The frogs so far mentioned have a free swimming tadpole stage, although the moaners are terrestrial breeders. They lay their spawn in burrows, outside water, as a foam nest. Once the burrows flood with the early winter rains, the tadpoles emerge. One species common around Perth is frequently sent to the museum as an oddity. The turtle frog (*Myobatrachus gouldii*) is an example of extreme ecological specialisation. This large frog has a small head with tiny eyes, and short, muscular limbs. It lives, feeds and breeds entirely underground, but during summer thunderstorms it calls from near the surface of its burrow with abrupt, deep croaks. It is one of many species in the south-west that do not have a free-living tadpole stage. This is known as direct development. Eggs of this species have been found more than a metre below the surface in moist sand.

All the frogs we have looked at so far are easily distinguished from one another without hearing their call. For some other species however, it is necessary to hear the call to identify the frog. The little froglet (*Crinia insignifera*) and Glauert's froglet (*C. glauerti*) are two small variable species that occur in the coastal plain. Both are small, long-limbed frogs with unwebbed fingers and toes and a variety of colours. The former makes a call that has been described as a 'squelch, like drawing a wet finger over a balloon' while the latter has a call like a 'long hollow rattle, rather like a pea in a can'. Both inhabit temporary or



permanent swamps and both are likely to occur in gardens close to lakes and swamps.

All frogs are carnivorous, many catching their prey by means of a sticky extendible tongue attached to the front of the lower jaw. All small frogs have a predominantly insectivorous diet. However, mites, snails, earthworms, spiders and other small animals are also eaten. Larger frogs may eat scorpions, centipedes and lizards. Anyone who has kept frogs in captivity, for even a short time, will know that it is essential to separate large ones from small ones because cannibalism is rife. It is also common in their natural state.

The feeding habits change dramatically during the life cycle. Tadpoles are mostly herbivorous, grazing on algae, while adult frogs are active predators. Most frogs appear to feed indiscriminately on moving animals. Sight is the important sense eliciting feeding behaviour and only moving prey is generally detected. The introduced cane toad (*Bufo marinus*) is an exception. In Queensland it is often an unwelcome guest around the feeding bowls of household pets.

Although frogs are harmless to people and don't bite, kick, scratch or make nuisances of themselves (unless one does not appreciate the melody of their seasonal mating calls), they should, nevertheless, be handled with care. This is not only for the frog's sake. Frogs have moist, glandular skins through which they breathe. They also secrete toxic mucus on to their skin, to help protect them from predators. These toxins may

The bull frog (*Litoria moorei*) is a large frequently encountered frog with a voracious appetite.

Photo - Grant Wardell-Johnson

Below: Gardens can be made more frog friendly with easily constructed ponds, as in this permaculture garden in Bridgetown.

Photos - Grant Wardell-Johnson

prove irritable to people, especially if they contact the eyes or mouth. If toxins do get into your eyes wash them with clean water. The large tree frogs are most likely to cause sensitivity.

MODIFYING GARDENS

Gardens can easily be made more frog-friendly. Species native to the local area may well make your garden their



home if you provide or conserve suitable habitats. They may also help in pest control and provide a year-round chorus that reflects the changes in season. A garden suitable for frogs will also be suitable for a wide variety of other wildlife. Much is written about making the garden more bird-friendly, but little on frog-friendliness, and it is easy to have both in the garden.

While it is possible to encourage frogs in the garden, they should not, however, be introduced, particularly if found a long distance away. The cane toad, introduced into the Queensland canefields from the Caribbean in an attempt to control a beetle, rapidly escaped from the canefields into the surrounding area. It is now having a severe effect on Queensland's environment. Other, more local, introductions have also led to conservation problems for native species. It is better to ensure that your garden has plenty of shelter sites so that the frogs in the area rapidly realise it is a welcome home.

Some gardens are more likely than others to harbour a large variety and number of frogs. On the whole, frogs prefer damp places, so shade and moisture, which always add to a garden, will encourage many species. A pond will always encourage frogs, particularly the bull frog. A pond is readily built and need not be a breeding site for mosquitoes, particularly if other animals such as frogs are present. An inexpensive but attractive pond can be made from black plastic and old tyres with rocks and reeds at its edge to hide the construction materials. Of course, these should not be taken from the bush, where they are already somebody else's home. Frog habitat will be improved by vegetation and shelter sites, such as small logs and rocks around the edge of ponds. If you live near a swamp, most of the local species will rapidly appear in the garden.

This preference for a damp habitat is associated with their method of breathing. The skin needs to be moist so that oxygen can diffuse throughout it and be picked up by the blood circulating just underneath. If exposed too long to a dry atmosphere, water will evaporate from the body, and the frog will dry out and ultimately die.

Because of the permeable skin of

frogs, they are also particularly susceptible to pesticides and other chemicals in the garden. A healthy garden is most easily achieved by minimal and carefully targeted use of chemicals.

The provision of abundant shelter sites will encourage many species of frogs (and also invertebrates). The more invertebrates the more frogs, and diversity in the system will reduce the need for continued intervention (such as spraying to remove pests). If logs and stones are turned when searching for frogs in the garden or other places, they should be replaced so that their homes will not be destroyed.

Frogs are great friends of the gardener. They will eat most common garden pests. They also add another dimension to a garden. A chorus of frogs around a pond at night ranks with the joy of chattering birds around a grevillea in the early morning, and it is just as easy to achieve with a little planning. Your garden could be a vibrant home for wildlife by day and by night.



There are five species of *Heleioporus*, or moaners, in the south-west. The whooping frog (*H. inornatus*) is found in sandy-peaty sites of the Darling Scarp and Plateau.

Photo - Grant Wardell-Johnson

Below: The banjo frog (*Lymnodynastes dorsalis*) is a very noble frog indeed. *Lymnodynastes* means 'Lord of the Marshes'. Its call is a loud explosive bonk from water.

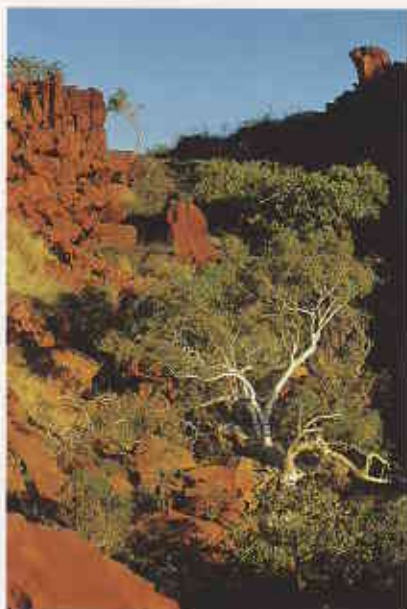
Photo - Grant Wardell-Johnson

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LANDSCOPE

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Nature-based tourism is a rapidly-growing industry and WA is poised to take a slice of that growth. See 'Our Natural Advantage' on page 10.



Frogs can be an interesting addition to any suburban native garden. Grant Wardell-Johnson describes how to attract them to your garden on page 16.



'Seagrass, Surf and Sea Lions' (page 21) are just some of the features of a string of islands that dot the WA coastline north of Lancelin.



Forrestdale Lake is an 'Outer City Sanctuary' for thousands of visiting and resident waterbirds. See page 35.



When is a flower not a flower? Neville Marchant, from CALM's WA Herbarium unravels the intricacies of the State's many 'False Flowers' on page 39.

FEATURES

OUR NATURAL ADVANTAGE SYD SHEA & JIM SHARP	10
FROGS IN THE GARDEN GRANT WARDELL-JOHNSON	16
SEAGRASS SURF AND SEA LIONS CAROLYN THOMSON & GREG POBAR	21
WILLIAM DAMPIER SUZANNE CURRY	28
OUTER CITY SANCTUARY ROD GIBLETT	35
FALSE FLOWERS NEVILLE MARCHANT	39
FOOTPRINTS ON THE SANDS OF TIME KEN McNAMARA & NIGEL TREWIN	44
OIL IN THE LEAVES LIZ BARBOUR & JOHN BARTLE	49

REGULARS

IN PERSPECTIVE	4
BUSH TELEGRAPH	6
ENDANGERED THE SWAMP FLOWER	27
URBAN ANTICS	54

COVER

The bull frog (*Litoria moorei*) is very large and has a voracious appetite. It is a frequent visitor to gardens and may be found particularly in greenhouses, ferneries and wet areas such as streams and ponds.

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